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## 4.5 AIR QUALITY

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### **INTRODUCTION**

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This chapter describes the effects of the Clover Valley Large and Small Lot Tentative Subdivision Map (LSLTSM) project on local and regional air quality. The chapter discusses existing air quality, construction-related impacts, direct and indirect emissions associated with the project, the impacts of these emissions on both the local and regional scale, and mitigation measures warranted to reduce or eliminate any identified significant impacts. This chapter is based on the URBEMIS model runs prepared by Don Ballanti, Consulting Meteorologist<sup>1</sup> (see Appendix E of this Draft EIR). Pertinent comments received in response to the Notice of Preparation (NOP) for the proposed project have been considered in this analysis.

### **ENVIRONMENTAL SETTING**

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The project site is located within the boundaries of the Placer County Air Pollution Control District (APCD), a member of the Sacramento Valley Air Basin (SVAB), which encompasses all of Sacramento, Yolo, Yuba, Sutter, Colusa, Glenn, Tehama, Shasta, and parts of Solano and Placer Counties. The modified Mediterranean climate in the area is characterized by hot, dry summers and mild, rainy winters. During the year, the temperature may range from 20 to 115 degrees Fahrenheit with summer highs usually in the 90s and winter lows occasionally below freezing (32° F). Prevailing winds are moderate in strength and vary from dry land flows from the north to moist ocean breezes from the south. The mountains surrounding the Sacramento Valley create a barrier to airflow which, under the right meteorological conditions, can trap pollutants in the Valley.

The project site is topographically a relatively shallow valley oriented in a north-south direction. The valley floor is relatively flat, but terrain slopes steeply to the east and west. The valley floor is about 300 feet in altitude, and the ridgelines east and west of the valley rise to 500 to 600 feet in altitude.

Climatic factors that affect air quality near the project site are wind and atmospheric stability. The daytime wind direction is generally southwesterly. During the nighttime, downstream air “drainage” flows are frequent, particularly in winter. These nighttime winds are generally light and follow the watercourse in a downstream direction.

Atmospheric stability is a measure of the atmosphere’s ability to vertically dilute pollutants. When the atmosphere is very stable (i.e., inversion conditions), pollutants may accumulate within a shallow layer near the ground, with resulting poor air quality. These conditions are most likely to occur in winter.

Potential air quality problems near the project site are directly related to climatic factors. During the summer months, the general wind circulation has the potential to transport ozone from the Sacramento metropolitan area. During the winter months, more localized problems can arise when particulate emissions from wood burning have the potential to accumulate under inversion conditions.

### Ambient Air Quality Standards

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. The federal standards are divided into primary standards which are designed to protect the public health, and secondary standards, which are designed to protect the public welfare. California State standards for air quality tend to be more stringent than the federal standards.

These ambient air quality standards for each contaminant represent safe levels that avoid adverse health effects. The standards cover what are called “criteria” pollutants because the effects of each pollutant are described in criteria documents. Although both processes shared an attempt to avoid health-related effects, the State and federal ambient standards were developed independently with differing purposes and methods. As a result, some differences between Federal and state standards are known to exist, as illustrated in Table 4.5-1.

<b>Table 4.5-1 Ambient Air Quality Standards</b>				
<b>Pollutant</b>	<b>Averaging Time</b>	<b>California Standards</b>	<b>Federal Standards</b>	
			<b>Primary</b>	<b>Secondary</b>
<b>Ozone</b>	1 Hour	0.09 ppm	0.12 ppm	Same as primary
<b>Ozone</b>	8 Hour	0.07 ppm	0.09 ppm	Same as primary
<b>Carbon Monoxide</b>	8 Hour	9 ppm	9 ppm	Same as primary
	1 Hour	20 ppm	35 ppm	
<b>Nitrogen Dioxide</b>	Annual Average	0.25 ppm	0.053 ppm	Same as primary
	1 Hour			
<b>Sulfur Dioxide</b>	Annual Mean	0.04 ppm	0.030 ppm	0.50 ppm
	24 Hour		0.14 ppm	
	3 Hour			
<b>Respirable Particulate Matter (PM<sub>10</sub>)</b>	Annual Mean	20 ug/m <sup>3</sup>	50 ug/m <sup>3</sup>	Same as primary
	24 Hour	50 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>	
<b>Fine Particulate Matter (PM<sub>2.5</sub>)</b>	Annual Mean	12 ug/m <sup>3</sup>	15 ug/m <sup>3</sup>	Same as primary
	24 Hour		65 ug/m <sup>3</sup>	
<b>Sulfates</b>	24 Hour	25 ug/m <sup>3</sup>		
<b>Lead</b>	30 Day Average	1.5 ug/m <sup>3</sup>	1.5 ug/m <sup>3</sup>	Same as primary
<b>Hydrogen Sulfide</b>	1 Hour	0.03 ppm	N/A	N/A
<b>Vinyl Chloride</b>	24 Hour	0.010 ppm	N/A	N/A

*ppm = Parts per Million*  
*ug/m<sup>3</sup> = Micrograms per Cubic Meter*  
 Source: California Air Resources Board, Ambient Air Quality Standards, November 29, 2005.

### Particulate Matter

Suspended particulate matter (airborne dust) consists of solid and liquid particles small enough to remain suspended in the air for long periods. “Respirable” PM consists of particles less than 10 microns in diameter, and is defined as “suspended particulate matter” or PM<sub>10</sub>. Particles between 2.5 and 10 microns in diameter arise primarily from natural processes, such as wind-blown dust or soil. Fine particles are less than 2.5 microns in diameter (PM<sub>2.5</sub>). PM<sub>2.5</sub>, by definition, is included in PM<sub>10</sub>. Fine particles are produced mostly from combustion or burning activities. Fuel burned in cars and trucks, power plants, factories, fireplaces, and wood stoves produces fine particles.

Particulate matter is a complex mixture that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These tiny particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. Particulate matter is divided into two classes, primary and secondary. Primary particles are released directly into the atmosphere from sources of generation. Secondary particles are formed in the atmosphere as a result of reactions that involve gases.

Particles greater than 10 microns in diameter can cause irritation in the nose, throat, and bronchial tubes. Natural mechanisms remove many of these particles, but smaller particles are able to pass through the body’s natural defenses and the mucous membranes of the upper respiratory tract and enter into the lungs. The particles can damage the alveoli, tiny air sacs responsible for gas exchange in the lungs. The particles may also carry carcinogens and other toxic compounds, which adhere to the particle surfaces and can enter the lungs.

### Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas produced by incomplete burning of carbon-based fuels such as gasoline, oil, and wood. Upon entering the body, CO combines with chemicals in the body and prevents blood from carrying oxygen to cells, tissues, and organs. Symptoms of exposure to CO can include problems with vision, reduced alertness, and general reduction in mental and physical functions. Exposure to carbon monoxide can also cause chest pain and headaches.<sup>2</sup>

### Nitrogen Oxide

Nitrogen oxides (NO<sub>x</sub>) are produced from burning fuels, including gasoline and coal. Nitrogen oxides react with volatile organic compounds (found in paints and solvents) to form smog, which can harm health, damage the environment, and cause poor visibility. Additionally, NO<sub>x</sub> constitutes a major component of acid rain. Health effects related to nitrogen oxide include lung irritation and lung damage.

### Toxic Air Contaminants

Unlike criteria pollutants, unsafe levels of exposure to TACs have not been established. Many different types of TACs exist, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage and death.

Diesel exhaust is a TAC of growing concern in California. The CARB in 1998 identified diesel engine particulate matter as a TAC. The exhaust from diesel engines contains hundreds of different gaseous and particulate components, many of which are toxic. Many of these compounds adhere to the particles, and because diesel particles are so small, they penetrate deep into the lungs. Diesel engine particulate has been identified as a human carcinogen. Mobile sources, such as trucks, buses, automobiles, trains, ships, and farm equipment are by far the largest source of diesel emissions.

### **Existing Air Quality**

The Federal Clean Air Act and the California Clean Air Act require all areas of California to be classified as attainment, non-attainment, or unclassified, in order to rate their status with regard to the national and/or State Ambient Air Quality Standards. A non-attainment area is a geographic location in which the level of criteria air pollutant is higher than the level allowed by either federal or State standards. Subsequent to the 1995 Clover Valley Lakes Annexation EIR, the EPA established new ozone and PM<sub>10</sub> standards<sup>3</sup> for all areas in the United States. Western Placer County is classified as a “severe” non-attainment area for federal ozone standards, and non-attainment for State ozone and both federal and State PM<sub>10</sub> standards.

The Placer County APCD and CARB monitor air quality in Placer County. The nearest monitoring site to the proposed project is located in nearby Roseville. Data for this site are displayed in Table 4.5-2.

**Table 4.5-2  
 Ambient Air Quality at Roseville, 2002-2004**

Pollutant	Standard	Days Standard Exceeded During:		
		2002	2003	2004
Ozone	1-Hour State	21	13	5
	1-Hour Federal	2	1	0
	8-Hour Federal	11	5	1
Carbon Monoxide	8-Hour St. Fed.	0	0	0
	1-Hour State	0	0	0
Nitrogen Dioxide	1-Hour State	0	0	0
PM <sub>10</sub>	24-Hour State	1	1	0
	24-Hour Federal	0	0	0
PM <sub>2.5</sub>	24-Hour Federal	0	0	0

Source: Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2005. (<http://www.arb.ca.gov/adam/cgi-bin/adamtop/d2wstart>)

## REGULATORY CONTEXT

Air quality is monitored through the efforts of various Federal, State, regional, and local government agencies. These agencies work jointly and individually to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for regulating and improving the air quality within Sacramento Valley are discussed below.

### Federal

#### Environmental Protection Agency

Placer County is included in the greater Sacramento ozone non-attainment area as delineated by the U. S. EPA.

The Federal Clean Air Act Amendments (FCAAA) of 1990 set deadlines for attaining the ozone standard. The Sacramento area was classified as a “serious” non-attainment area and given a date of 1999 by which to achieve attainment. Because achieving attainment by this date was later found to be infeasible, the region was “bumped up” to “severe” classification and an attainment date of 2005 was designated. The Clean Air Act Amendments also set specific planning requirements to ensure that the attainment goal would be met. In 1994, the CARB, in cooperation with the air districts of the Sacramento non-attainment area, fulfilled one of these requirements by preparing the 1994 Sacramento Area Regional Ozone Attainment Plan. The plan identified a detailed comprehensive strategy for reducing emissions to the level needed for attainment and showed how the region would make expeditious progress toward meeting this goal.

On April 15, 2004 the Environmental Protection Agency (EPA) designated the greater Sacramento ozone non-attainment area as a “serious” non-attainment area for the federal 8-hour ozone standard. The 8-hour ozone standard, 0.08 parts per million (ppm), averaged over eight hours, replaces the 1-hour standard that has been in place since 1979. The region has been given an attainment date of June, 2013.

## **State**

### California Clean Air Act

The California Clean Air Act (CCAA) requires that air quality plans be prepared for areas of the State that have not met State air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide. Under the CCAA, Placer County is a non-attainment area for ozone and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>).

## **Local**

### Placer County Air Pollution Control District

The Placer County APCD is a member of the SVAB. The SVAB encompasses all of Sacramento, Yolo, Yuba, Sutter, Colusa, Glenn, Tehama, Shasta, and parts of Solano and Placer Counties. The APCD is responsible for pollution control operations within the county, including monitoring air quality and the preparation of air quality plans.

### City of Rocklin General Plan

The City of Rocklin General Plan<sup>4</sup> provided policies adopted by the City Council in order to help guide the direction of City development. The policy related to air quality is as follows:

#### *Circulation Element*

- Policy 25 To coordinate and cooperate with the Placer County Air Pollution District in the development of stationary and mobile source control measures affecting the City of Rocklin to be included in the California Clean Air Act Plan for Placer County.

## **IMPACTS AND MITIGATION MEASURES**

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### **Standards of Significance**

According to California Environmental Quality Act (CEQA) Guidelines, an air quality impact may be considered significant if the proposed project’s implementation would result in, or potentially result in, conditions which include:

- Expose sensitive receptors to substantial pollutant concentrations; or

- Result in new emissions exceeding the Placer County Air Pollution Control District's recommended thresholds of significance for either construction or operation. These thresholds are 82 pounds-per-day for Reactive Organic Gases (ROG), Nitrogen Oxides (NO<sub>x</sub>), Sulfur Oxides (SO<sub>x</sub>), or PM<sub>10</sub>; and 550 pounds-per-day of Carbon Monoxide (CO).

### **Method of Analysis**

In addition to CEQA significance thresholds mentioned above, criteria for determining whether the potential air quality impacts of a project need to be analyzed in an EIR have been determined by the Placer County APCD.

### Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Land uses such as schools, hospitals, and convalescent homes are considered to be more sensitive to poor air quality because the young, the old, and the infirm are more susceptible to respiratory infections and other air quality-related health problems in comparison to the general public. Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercising places a high demand on respiratory functions, which can be impaired by air pollution. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, with the majority of workers spending the majority of their time indoors. In addition, the working population is generally the healthiest segment of the public.

### URBEMIS-2002

The URBEMIS-2002 program<sup>5</sup> was applied to the project to estimate the maximum construction emissions from site grading, equipment exhaust, construction worker vehicle trips and other construction activities. Construction was assumed to be completed over a five-year period. The types and amounts of equipment to be utilized during the different phases of construction were based on published guidance.<sup>6</sup>

Estimates of operational emissions generated by project traffic and area sources were made using a program called URBEMIS-2002. URBEMIS-2002 is a program that estimates the emissions that result from various land use development projects. Inputs to the URBEMIS-2002 program include trip generation rates, vehicle mix, average trip length by trip type and average speed. The URBEMIS-2002 parameters used in the analysis are included in Appendix E of this Draft EIR.



The URBEMIS-2002 program was run to calculate both summer and winter emissions. The summer results were used to estimate ozone precursor emissions while the winter results were used to estimate emissions of other pollutants.

#### CALINE-4

Project impacts on carbon monoxide concentrations near roads affected by project traffic were estimated using a screening form of the CALINE-4 model.<sup>7</sup> Normalized concentrations for each roadway size (two lanes, four lanes, etc.) are adjusted for the two-way traffic volume and emission factor. Calculations were made for a receptor at a corner of the intersection, located at the curb. Emission factors were derived from the CARB EMFAC7-2002 computer program based on a 2005 and 2025 Placer County vehicle mix.

The screening-level form of the CALINE-4 program was developed for Bay Area (coastal valley) meteorology. The assumed worst-case assumed wind speed in the model is 1.0 meters per second. To adjust for the lighter winds typically assumed for the Sacramento Valley (interior valley meteorology), the normalized concentrations were doubled based on the assumption of a 0.5 meter per second worst-case wind speed.

The screening form of the CALINE-4 model calculates the local contribution of nearby roads to the total concentration. The other contribution is the background level attributed to more distant traffic. The one-hour background level in 2005 was taken as 3.5 PPM and the 8-hour background concentration was taken as 1.7 PPM. The one-hour background level in 2025 was estimated as 2.6 PPM and the eight-hour background concentration was taken as 1.3 PPM. These backgrounds were estimated using isopleth maps and correction factors developed by the Sacramento Metropolitan Air Quality Management District that extend into southwestern Placer County.<sup>8</sup>

Eight-hour concentrations were obtained from the one-hour output of the CALINE-4 model using a persistence factor of 0.7.

### **Project-Specific Impacts and Mitigation Measures**

#### **4.5I-1 Impacts related to construction-generated pollutants.**

Construction activities related to the proposed project would generate air pollutants intermittently within the site (and the vicinity of the site) until completion of all construction phases. These air pollutants would include:

- emissions from construction equipment;
- dust from grading and infrastructure improvements; and
- reactive organic gases (ROG) emission from the laying of asphalt road surfaces.

Dust from construction activities can cause impacts both locally and regionally. The dry climate of the area during the summer months, combined

with the fine, silty soils of the region, creates a high potential for dust generation. Increased dustfall and locally elevated levels of PM<sub>10</sub> near construction activity are expected. Depending on the weather, soil conditions, the amount of activity taking place at any one time, and the nature of dust control efforts, these impacts could significantly affect existing land uses near the project site.

Construction-period emissions were estimated using the URBEMIS-2002 program. Mass-grading of the portions of the site that are proposed for grading was assumed to be accomplished first, while actual construction of the project would occur over a period of years. Table 4.5-3 shows predicted maximum construction emissions for each phase of construction under worst-case assumptions of completion of grading in one year and construction of all residences within the following 5 years, with 112 homes built each year.

<b>Table 4.5-3 Construction Emissions for On-Site Project</b>				
<b>Construction Phase</b>	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>PM<sub>10</sub></b>
Site Grading	53.0	385.3	441.4	1208.6
Building Construction	16.1	98.1	129.0	15.3
<b>PCAPCD Significance Threshold</b>	<b>82.0</b>	<b>82.0</b>	<b>550.0</b>	<b>82.0</b>
Note: The significance thresholds apply to each phase of construction separately, not additively, because the phases would occur sequentially and the construction emissions would not thus not be cumulative. Source: Donald Ballanti, Certified Consulting Meteorologist.				

As Table 4.5-3 indicates, levels of NO<sub>x</sub> and PM<sub>10</sub> generated by site grading would exceed the acceptable levels as designated by the PCAPCD. Additionally, fugitive dust emissions would also be considered substantial, potentially affecting sensitive receptors such as residences and parklands.

In addition, construction activities related to installation of the new 12-inch off-site sewer line in the streets of Rawhide, Midas, Argonaut and Union would be expected to result in air quality impacts. Development would include digging a large trench, lowering the sewer pipe, and ultimately repaving the street. Typically, this construction process would be performed in segments, such that throughout the duration of the project, trenching, pipe-laying, and backfill activities would occur only along one portion of the entire alignment at any given time. If impenetrable rock surfaces would be discovered below the street surface during excavation, blasting would potentially become necessary to continue the process.

Therefore, *significant* impacts would occur related to construction-generated emissions.

Mitigation Measure(s)

Implementation of Mitigation Measure 4.5MM-1(a) below would reduce fugitive dust emissions on and off-the project site (PM<sub>10</sub>). Measures 4.5MM-1(a-e) would reduce NO<sub>x</sub> emissions from construction and grading operations. However, although these measures would reduce the magnitude of project impacts, the overall impact would be *significant and unavoidable*.

*4.5MM-1(a) Prior to issuance of a grading permit, the applicant shall submit a dust control plan to the City Engineer and the Placer County Air Pollution Control District. This plan shall ensure that adequate dust controls are implemented during all phases of project construction at the developer's expense, including the following:*

- *Water exposed earth surfaces as necessary to eliminate visible dust emissions (at least one water truck shall be available for every three pieces of earthmoving equipment);*
- *When grading within 100 feet of any residence, park or other sensitive receptor boundary, utilize pre-soaking with sprinklers or water trucks in addition normal watering for dust control soil moisture is adequate to eliminate any visible dust emissions;*
- *Suspend grading operations when wind is sufficient to generate visible dust clouds;*
- *Pave, use gravel cover or spray a dust control agent on all haul roads;*
- *Reduce speeds on unpaved roads to 25 mph or lower (this speed must be posted);*
- *All grading operations shall be suspended when sustained wind speeds exceed 25 mph;*
- *All exposed surfaces shall be re-vegetated as quickly as possible;*
- *If fill dirt is brought to the construction site, traps or soil stabilizers shall be placed on the dirt piles to minimize dust problems;*
- *No open burning of any kind shall be allowed; vegetative material shall be chipped or delivered to waste or energy facilities.*
- *Clean earthmoving construction equipment with water once daily, and clean all haul trucks leaving the site;*
- *Cover all trucks hauling soil, sand, and other loose materials and ensure that all trucks hauling such materials maintain at least two feet of freeboard;*

- *Institute measures to reduce wind erosion when site preparation is completed;*
- *Install sandbags or other erosion control measures to prevent silt runoff onto public roadways;*
- *Provide paved or grass-covered areas for construction employee vehicle parking; and*
- *Designate a person or persons to monitor the dust control program as approved by the PCAPCD, and to order increased watering, as necessary, to prevent the transport of dust off site. This designee's duties will include holiday and weekend periods when work may not be in progress.*

For on- and off-site project components that would not be constructed/developed immediately following the mass-grading phase, the following dust control measures are also required:

- *Apply chemical soil stabilizers or commence reestablishing ground cover to construction areas within 96 hours of completing finished grading activities; and*
- *Develop and implement a wind erosion monitoring program for areas which will remain inactive for extended periods; this program should at a minimum provide for weekly monitoring of inactive sites to assess the effectiveness of wind erosion controls.*

The following additional mitigation measures would reduce emissions from construction equipment and vehicle exhaust:

*4.5MM-1(b) Contractors shall be required to reduce NO<sub>x</sub> emissions by complying with the construction vehicle air pollutant control strategies developed by the PCAPCD. Prior to issuance of a grading permit, the applicant shall provide to the City the following requirements or measures in the construction contracts:*

- *Construction equipment operators shall shut off equipment when not in use to avoid unnecessary idling. Generally, vehicle idling should be kept below 10 minutes;*
- *Contractor's construction equipment shall be properly maintained and in good working condition;*
- *Construction equipment exhaust shall not exceed PCAPCD Rule 202 (Visible Emissions) limitations;*
- *The prime contractor shall submit to the PCAPCD a comprehensive inventory (i.e. make, model, year, emission rating) of all heavy-duty off-road equipment (50*

*horsepower or greater) that will be used an aggregate of 40 hours or more for the construction project. PCAPCD personnel, with assistance from the California Air Resources Board, will conduct initial Visible Emissions Evaluations of all heavy-duty equipment on the inventory list; and*

- *The prime contractor shall provide a plan for approval by the Placer County Air Pollution Control District demonstrating that the heavy-duty (>50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project-wide fleet average 40 percent NO<sub>x</sub> reduction and 45 percent particulate reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.*

*4.5MM-1(c) Construction contractors shall be required to use low-VOC architectural coatings and asphalt in compliance with District Rules and Regulations. Contractors shall also be required to fuel stationary construction equipment with low-sulfur fuels, and use existing power sources (e.g., power poles) or clean fuel generators in place of temporary diesel power generators whenever feasible.*

#### **4.5I-2 Impacts resulting from increased vehicle and area source air emissions.**

Project traffic emissions would have an effect on air quality outside the project vicinity. Trips to and from the project and area sources associated with residential/commercial uses would result in air pollutant emissions within the air basin. The daily increase in regional emissions from auto travel and area sources is shown in Table 4.5-4 for Reactive Organic Gases, Nitrogen Oxides and PM<sub>10</sub>. Table 4.5-4 shows that project operational emissions would exceed the PCAPCD thresholds of significance for ROG and PM<sub>10</sub>, so project regional air quality impacts would be significant.

<b>Table 4.5-4 Operational Emissions</b>			
	<b>ROG</b>	<b>NO<sub>x</sub></b>	<b>PM<sub>10</sub></b>
Area Sources	51.0	7.6	86.4
Vehicles	43.1	48.6	57.6
<i>Total</i>	<i>94.1<sup>1</sup></i>	<i>56.2<sup>1</sup></i>	<i>144.0<sup>2</sup></i>
<b>PCAPCD Significance Threshold</b>	<b>82.0</b>	<b>82.0</b>	<b>82.0</b>
Notes: 1. ROG and NO <sub>x</sub> figures shown here are taken from the summer emissions run of URBEMIS because ROG and NO <sub>x</sub> are ozone precursors, and summer is ozone season. The summer season is therefore the season of concern for these pollutants. 2. PM <sub>10</sub> is not an ozone precursor and is generally higher in winter; therefore, PM <sub>10</sub> figures shown are taken from the winter emissions run of URBEMIS. Source: Donald Ballanti, Certified Consulting Meteorologist			

Project emissions shown in Table 4.5-4 would also affect air quality within the local air basin of Clover Valley. In particular, smoke from wood burning fireplaces or wood stoves, which is responsible for the majority of PM<sub>10</sub> area source emissions in Table 4.5-4, could adversely affect local air quality. On winter evenings the steep walls of the narrow valley, in combination with stable atmospheric conditions and frequent light winds, can restrict transport and dilution of pollutants. These restrictive weather conditions would likely coincide with the time of maximum wood burning in residences. Wood burning at project residences has the potential to degrade local air quality under certain weather conditions, resulting in a *potentially significant* impact.

Mitigation Measure(s)

The following mitigation measures would reduce project emissions of ROG and PM<sub>10</sub> to a *less-than-significant* level.

- 4.5MM-2(a) *Bus turnouts shall be provided throughout the project as determined by the City Engineer in coordination with the Placer County Transit Authority.*
- 4.5MM-2(b) *A minimum 4-foot-wide, Class II bicycle lane shall be provided by the developers on Valley View Parkway and Nature Trail Way. (It should be noted that the project design includes this bicycle lane.)*
- 4.5MM-2(c) *The applicant shall provide a park-and-ride parking area in the commercial area or other appropriate location as determined by the Placer County Transit Authority.*

The City of Rocklin and Placer County APCD have identified additional measures intended to provide a 40-percent offset of new emissions as part of the regional effort to attain the federal ozone standards. These measures are incorporated into the following mitigation measure.

4.5MM-2(d) *Prior to approval of the final map, the applicant shall show compliance with the following mitigation measures requirements of the General Development Plan:*

- *Reduction of emissions associated with landscape management, where appropriate, by landscaping with native, drought-resistant species;*
- *Installation of low NO<sub>x</sub> hot water heaters pursuant to Air District Rule;*
- *Require installation of electrical outlets at both the front and rear of the residences for the use of electric landscape maintenance equipment;*
- *Provide notice to homebuyers of incentive and rebate that encourage the purchase of electric landscape maintenance equipment;*
- *Incorporate solar heaters in proposed residences as feasible;*
- *Include high-efficiency heating and other appliances, such as water heaters, cooking equipment, refrigerators, furnaces, and boiler units;*
- *Include energy-efficient window glazing, wall insulation, and efficient ventilation methods on all new residential units; and*
- *Participate in the Placer County Air Pollution Control District's off-site Mitigation Program. Fees for single-family residences shall be collected at the time of building permit issuance.*

The following measures shall be implemented to reduce project PM<sub>10</sub> emissions and potential impacts related to residential wood-burning:

4.5MM-2(e) *The General Development Plan and CC&Rs shall indicate the following mitigation measures:*

- *The City shall not approve building permits for fireplaces in homes that do not have a primary heating source other than a fireplace. All fireplaces shall be plumbed for natural gas.*
- *Only US EPA-certified woodstoves shall be installed.*
- *Open burning shall be prohibited throughout the project site.*

**4.5I-3 Increased carbon monoxide concentrations.**

The project would change traffic on the local street network, changing carbon monoxide levels along roadways used by project traffic. Carbon monoxide is an odorless, colorless poisonous gas whose primary source is automobiles. Concentrations of this gas are highest near intersections of major roads.

Carbon monoxide concentrations under worst-case meteorological conditions have been predicted for two signalized intersections affected by project. These intersections were selected as currently operating at Level Of Service D or worse. Peak traffic volumes were applied to a screening form of the CALINE-4 dispersion model to predict maximum one- and eight-hour concentrations near these intersections. The model results were used to predict the maximum one- and eight-hour concentrations, corresponding to the one- and eight-hour averaging times specified in the State and federal ambient air quality standards for carbon monoxide.

Table 4.5-5 shows the results of the CALINE-4 analysis for the peak one-hour and eight-hour traffic periods in parts per million (PPM). The one-hour values are to be compared to the federal one-hour standard of 35 PPM and the state standard of 20 PPM. The eight-hour values in Table 4.5-5 are to be compared to the state and federal standard of 9 PPM.

Table 4.5-5 shows that existing predicted concentrations near the intersections meet the one-hour and eight-hour standards. Traffic from the proposed project would increase concentrations by up to 0.2 PPM, but concentrations would remain below the most stringent state or federal standards. Future concentrations with cumulative traffic are below current levels due to anticipated reductions in per-mile emissions rates for vehicles.

Because project traffic would not cause any new violations of the eight-hour standards for carbon monoxide, nor contribute substantially to an existing or projected violation, project impacts on local carbon monoxide concentrations are considered to be *less-than-significant*.

Mitigation Measure(s)

*None required.*



<b>Table 4.5-5                      Predicted Worst Case Carbon Monoxide Concentrations,                      in Parts Per Million</b>						
<b>Intersection</b>	<b>Existing</b>		<b>Existing +                      Project</b>		<b>Cumulative +                      Project                      (2025)</b>	
	<b>1-Hr.</b>	<b>8-Hr</b>	<b>1-Hr.</b>	<b>8-Hr</b>	<b>1-Hr.</b>	<b>8-Hr.</b>
Sierra College/ I-80 Westbound Ramps	9.2	5.7	9.4	5.8	4.3	2.5
Sierra College/ I-80 Eastbound Ramps	9.0	5.5	9.1	5.6	4.3	2.5
<b>Most Stringent Standard</b>	<b>20.0</b>	<b>9.0</b>	<b>20.0</b>	<b>9.0</b>	<b>20.0</b>	<b>9.0</b>
Source: Donald Ballanti, Certified Consulting Meteorologist, 2005.						

## Cumulative Impacts and Mitigation Measures

### 4.5I-4 Cumulative air quality impacts.

Placer County is classified as a severe non-attainment area for the federal ozone standards. In order to improve air quality and attain the health-based standards, reductions in emissions are necessary within the non-attainment area. The rapid growth and combined population, vehicle usage, and business activity within the non-attainment area, to which the project would cumulatively contribute, would either delay attainment of the standards or require the adoption of additional controls on existing and future air pollution sources to offset project-related emission increases. The project would also cumulatively contribute to regional air quality health effects through emissions of criteria and mobile source Toxic Air Contaminants.

Ozone, particulate matter and some constituents of ROG that are also TACs have been shown to be correlated with adverse health effects. For example, studies have shown that children who participated in several sports and lived in communities with high ozone levels were more likely to develop asthma than the same active children living in areas with less ozone pollution. Other studies have found a positive association between some volatile organic compounds and symptoms in asthmatic children. A large body of evidence has shown significant associations between measured levels of particulate matter outdoors and worsening of both asthma symptoms and acute and chronic bronchitis. While general correlations between pollutant concentrations as measured in urban environments and such factors as hospital visits or deaths from respiratory diseases such as asthma, bronchitis or lung cancer have been established, direct causal relationships for individual pollutants have not been established. It is not possible to predict increases in severity of disease, hospital visits or deaths from respiratory diseases such as asthma, bronchitis or lung cancer resulting from an indirect

source of air pollutants such as the project. But it is known that existing cumulative air pollutants in the region increases the likelihood that individuals will experience such effects, and that this project will incrementally contribute to such cumulative air pollutants.

The project is part of a pattern of rapid urbanization occurring in the greater Sacramento ozone non-attainment area. This project, in combination with other past, present and reasonably foreseeable projects within Rocklin, the I-80 corridor and southwestern Placer County, would result in regional air emissions increases well beyond the PCAPCD significance threshold. The long-term cumulative air quality impacts of the project would therefore be considered *significant*.

Mitigation Measure(s)

Implementation of Mitigation Measure 4.5MM-2 would reduce the magnitude of the impacts; however the cumulative impacts would remain *significant and unavoidable*.

**Endnotes**

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<sup>1</sup> Ballanti, Don. Consulting Meteorologist. *Air Quality Chapter*, December 9, 2005.

<sup>2</sup> U.S. Environmental Protection Agency website (<http://www.epa.gov>). Accessed December 8, 2005.

<sup>3</sup> U.S. Environmental Protection Agency, 1998.

<sup>4</sup> City of Rocklin General Plan, 1991 (p. 12).

<sup>5</sup> Jones and Stokes Associates, Software User's Guide: URBEMIS2002 for Windows with Enhanced Construction Module, Version 8.7, 2005.

<sup>6</sup> Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County*, July 2004.

<sup>7</sup> Bay Area Air Quality Management District, *BAAQMD CEQA Guidelines*, 1996 (Revised 1999).

<sup>8</sup> Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County*, July 2004.